Stereo tube power amplifier. Rated at 70W/8 & 4ohm
Made by: Audio Research Corp, Minnesota, USA
Supplied by: Absolute Sounds Ltd
Telephone: 0208 971 3909
Web: www.audioresearch.com; www.absolutesounds.com
Price: £14,998

AUDIO FILE

hi-fi news OUTSTANDING PRODUCT

Audio Research Reference 80S

Since last year's management buyout, Audio Research has been very busy reimagining its ranges of the future – the Reference 80S (REF80S) is just the first step on the road

Review & Lab: **Paul Miller**

If life is a journey, rather than a destination, then some brands, Audio Research included, have rather more air miles under their corporate belts than others. From a boutique audiophile business to a period swept up in the fast lane of venture capital [see boxout, p41], Audio Research has now returned to its roots. It's a gloriously niche brand that understands 'what it does' and is now, once again, driven and engineered by a team that is passionate about serving the diehards of the audiophile community.

What Audio Research 'does', in the main, is make very fine tube amplifiers, and while the brand was busily circumnavigating the globe, its amplifiers have been on a journey – an evolution – of their own. So while the REF80S featured here may well be a new and, viewed via the colourful prism of high-end hi-fi, 'affordable' step into the realm of ARC's Reference series, it's not some fresh experiment on us audiophile guinea pigs. This is fine wine, not home brew...

IT'S IN THE DNA

In practice, the genetics of this latest 70W-rated stereo power amp can be traced back through a few generations of Audio Research thinking. The industrial design, dominated by those etched-onto-acrylic 'GhostMeters' is a masterwork in its own right, while the frontal aesthetic and footprint of the REF80S is clearly modelled on the bigger REF160M and REF160S [*HFN* Aug '18 & Feb '20]. These big beasts of the tube amp jungle also feature 6H30 double-triodes as phase-splitters/drivers and bulbous KT150 output tubes, albeit twice as many as we find in the REF80S. They also offer switchable Ultralinear (UL) and Triode tube configurations, a popular novelty carried over into the REF80S.

Other production engineering updates are enjoyed by the REF80S, including the four-layer PCBs debuted in the REF160M/S. However, I'm tempted to suggest that many of the core circuit features that actually inform the *sound* of the REF80S owe more to the earlier 6H30/KT120-equipped VT80 [*HFN* Oct '17]. This was not only the first ARC amp to utilise an auto-bias regime but its custom-built output transformer is the blueprint for the lump of iron and copper weighing down the rear of the REF80S.

Incidentally, ARC's transformers have been made in North America for some 40 years – a third-party relationship that gives it decisive control over the sound and consistency of its tube amplifiers. Another tradition, despite the modern quad-layer boards, is ARC's avoidance of any flow soldering in its Minnesota production facility. Everything is hand-assembled, hand-wired and hand-soldered. Since the buyout, an increasing amount of assembly has been brought back in-house, or kept very local, including the laser-etching of the meters and chassis painting. Even some staff who had left in recent years have returned – important in ARC's ambition to offer service for every tube product it has ever made.

'The "Forging" chimes were spectacularly vivid here'

RIGHT: Cover removed reveals the 6H30 driver triodes and pairs of KT150 output tubes per channel. Auto-biasing will also accommodate lower output 6550, KT88, and KT120 tubes, should you wish...

STEP ON THE LADDER

The REF80S also marks a renewed emphasis on providing more accessible avenues into the ARC product family. We reported recently [*HFN* Feb '21] on Audio Research's new, and even more affordable, 50th Anniversary I-series that'll kick off with the I-50 integrated and be joined by the P-50 pre and A-50 power amp by the end of 2021. This marks a return to the, in my view, sensible strategy that gave us the SP17 preamp, VS60 power amp and VSi60 integrated some 7-8 years ago.

But back to now, and the REF80S's ghost in the machine. I've commented before on the accuracy, or otherwise, of ARC's metering. The old-school meters fitted to the REF75 [*HFN* Nov '12] were reliable, the large-format meters on the GS150 [*HFN* Jan '15] and the embryonic 'GhostMeter', unveiled on the REF160M, proving of decorative value only. Perhaps ARC's technicians read my Lab Reports because the subsequent REF160S's meters were better calibrated, as are the ethereal apparitions that grace the REF80S's visage.

Very low and very high power outputs tend to under-read here, so a 0.75W/8ohm output appears as 0.075W on the REF80S's 'Pentode' scale while 75W/8ohm, just prior to clipping, registers at the tick midway between 7.5-75W. However, a mid-power 7.5W/8ohm – not an unlikely output in common usage – finds the needle flickering near enough bang-on the mark.

ABOVE: Under the statement 'GhostMeters' are four buttons catering for power on, meter illumination, tube monitoring and Ultralinear/Triode modes, the LED changing green to blue

FULL CIRCLE

Bill Johnson, Audio Research Corporation's founder, built and sold tube products under the Electronic Industries banner through the 1960s before he consolidated the ARC brandname in 1970. Thirty-eight years later, aged 81, Bill sold his company to Fine Sounds who, in 2008, already owned the Italian Sonus faber brand. It was a good match and Bill remained as Chairman Emeritus until he passed away in 2011. Fine Sounds, under the auspices of Mauro Grange, grew with the purchase of Sumiko in 2010, Wadia in 2011, and McIntosh in 2012 from D&M Holdings. In 2014 the entire group was sold by Quadrivio (the venture group behind Fine Sounds) to LBO France, another investment company.

Renamed The McIntosh Group in 2016, and with ARC still firmly ensconced, Mauro left at the end of the year, leaving McIntosh's Charlie Randall in charge before Jeff Poggi – previously at Harman Automative and the HK Luxury Audio Group – was hired as co-CEO in 2017. Charlie looked after McIntosh and Jeff took control over Sonus faber, ARC and Sumiko (also distributing Pro-Ject in the US). With Audio Research keen to focus on its core expertise, and with little chance this brand could 'grow' into the home theatre, custom install or automotive sectors, it was eventually allowed to fly solo once again.

A very amicable buyout was agreed in Sept 2020 with Trent Suggs, ARC's ex-sales manager, now President and owner. The McIntosh Group continues with all its previous brands. Now, while visitors to international hi-fi shows are unlikely to have bumped into the corporate owners, many of us will have spun a disc or two with ARC stalwart Dave Gordon – including at our own Hi-Fi Show *Live* at Ascot. Dave Gordon joined the company in 1989, from Magnepan, circling back after a short detour to Thiel from 1992-96. Dave is now Audio Research's MD.

MUSIC ON TAP

There are certainly no 'bangs' when you fire-up the REF80S, its output muted for a couple of minutes as the PSU and KT150s cycle up and back down again to stabilise the tubes' temperature and biasing. Connection to the rear 16, 8 and 4ohm speaker taps is not necessarily so straightforward – in Triode mode you'll achieve the best results with 4ohm nominal speakers connected to the 4ohm tap (circa 40W), but the same is not true in UL mode. Here the KT150's screen grids are connected to an additional transformer winding – the 'feedback' squeezing down tube distortion – this configuration causing the REF80S to deliver more power into tougher 4ohm loads from its 8ohm output (~80W) than via its 4ohm tap (~45W).

I reported the same 'feature' in our VT80 review and here, as there, I heard my 'reference' B&W 800 D3s [*HFN* Oct '16] singing most confidently via the REF80S's 8ohm terminals. I'd dearly love to have experienced the REF80S with the high impedance/high sensitivity DeVore Fidelity O/96s [*HFN* Apr '21] as these would be one of the very few speakers to make good use of ARC's unusual (these days) 16ohm option. Sadly, the Audio Research REF80S and DeVore O/96s passed in and out of my listening room like ships in the night... ⟳

ABOVE: Small toggles switch between single-ended (RCA) and balanced (XLR) inputs, fan speed and auto-shut off (signal sensing). Tube hours are indicated beside a bladed IEC mains inlet, while 4mm speaker binding posts offer 16ohm, 8ohm and 4ohm taps

Nevertheless the REF80S commands sufficient presence, and down-to-earth 'grunt', to marshal tremendous sonic forces – necessary in realising the likes of Wagner's *Ring Cycle* [Duisburger Phil/Jonathan Darlington; Acousence ACO21309, 192kHz/24-bit]. This it does with not a little substance and style, the panoramic richness of the 105 players – including guests! – revealed across a gloriously wide and deep soundscape.

The instruments, from violins to oboes to tympani and harps are all sharply drawn but their union is a richly coloured tapestry, not a contrasty black-and-white sketch. The chimes and other percussion that mark the Nibelungs' 'Forging' sounded spectacularly vivid here, the hollow metallic ringing bringing a very realistic sense of height to this orchestral drama. If you fancy being swept away by music of such scale, then the REF80S makes for a very secure lifeboat.

It does intimacy too. Chip Taylor and Carrie Rodriguez's 'Sweet Tequila Blues' [*Let's Leave This Town*; Train Wreck Records TW019] is about as undemanding but sensitively-played a C&W set as will caress your ears, Chip's world-weary lament juxtaposed by the punchier quality of his more youthful fiddler and vocalist companion. With the REF80S in tow you are not so much invited as compelled to drum your fingers and tap your feet as you are wrapped in the close, but never cloying, acoustic of this very honest, stripped-back recording.

READY TO ROCK

But can the REF80S rock? You bet! I could feel the raw electricity generated by Lifeson's opening riff to the 96kHz remix of Rush's one-time chart hit 'The Spirit Of Radio' [*Permanent Waves 40th Anniversary*; Mercury Records]. Peart's drums, and the backing sequencer, possessed all the impact and energy I'd expect to hear from the big Constellation amps [*HFN* Oct '19] that ordinarily put the hammer down on my 800 D3s. Like these monoblocks, the REF80S has genuine 'slam', delivering bass with richness, texture and speed – there's none of the laziness or overhang you might hear from a more 'traditional' tube amp.

TUBES OR TRANSISTORS?

Time passes, to be sure, but the security and 'positivity' of the REF80S's presentation reminded me of listening to the fabulously eccentric KR Audio Kronzilla DX [*HFN* Sep '15] with late-lamented colleague and contributor John Bamford. KR's custom T-1610 direct-heated double-triodes are an entirely different kettle of filaments, but the REF80S shares with them a solidity of sound, a definition and precision that's as close to 'solid-state' as any tube amp would care to attempt. This is 'tube sound' curated for 21st century listening.

HI-FI NEWS VERDICT

If Audio Research's first act of freedom was to embrace the 'everyday' audiophile then the forthcoming I-series looks to be just the ticket, just as this REF80S is surely the most accessible and compelling gateway to its top-tier Reference range yet offered. It's hardly beer-budget stuff but the fiscal strain will likely prove secondary to the emotional wrench if you hear this amp in full flight but then must walk away.

Sound Quality: 89%

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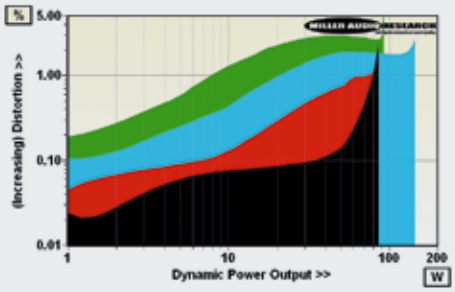
LAB REPORT

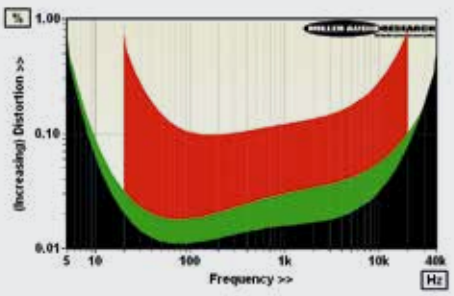
AUDIO RESEARCH REF80S

Where does the REF80S sit in the ARC performance landscape? Far *quieter* than the similarly-specified 75W GSi75 [*HFN* Jan '16] which featured the same complement of 6H30 double-triode drivers and KT150 output tubes – the latter was an integrated amp offering +33dB gain with a 76.8dB A-wtd S/N ratio (re. 0dBW) while the REF80S provides +24.7dB and a spectacularly wide 98.0dB S/N. In this respect it's up with the 6H30/KT120-equipped VT80 [*HFN* Oct '17] and REF75 [*HFN* Nov '12] before it, these offering the same +24.8dB gain (balanced input), wide 97.8dB S/N noise and >80dB stereo separation (20Hz-20kHz). All three amplifiers share the same (or very similar) output transformer with its usefully low 1.0-1.3ohm impedance, so the amp/speaker response is less influenced by loading.

Into 'flat' 8 and 4ohm loads the REF80S mirrors the REF75, VT80 and beefier KT150-equipped REF160S [*HFN* Feb '20] with an extended –0.3dB/20kHz and –4.0dB/100kHz response via 8 and 4ohm taps into 8/4ohm loads, respectively. There's a greater high-treble roll-off in Triode mode of –0.5dB/20kHz to –9.6dB/100kHz into 8ohm. Distortion, too, follows the trends we've seen in these earlier ARC amps at 0.017-0.095%/1W increasing to 0.095-0.88%/10W (UL mode, 20Hz-20kHz), and fractionally lower at 0.011-0.08%/1W in Triode mode [Graph 2, below]. Distortion increases gently with output, and at low bass frequencies through transformer core saturation. Power output also follows a predictable pattern – the REF80S achieving 2x80W into 8/4ohm loads (2x38W in Triode), increasing slightly to 85W into 8/4ohm and 140W/2ohm under dynamic conditions [Graph 1, below], the 9.6A current limit realised at 92W/1ohm. **PM**



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 9.6A



ABOVE: Distortion vs. frequency (20Hz-20kHz, 10W, red; 5Hz-40kHz, 1W Ultralinear, green; Triode, black)

HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	79W (38W) / 80W (38W)
Dynamic power (<2% THD, 8/4/2/1ohm)	85W / 85W / 140W / 92W
Output imp. (20Hz–20kHz/60kHz)	1.04–1.30ohm / 2.06ohm
Freq. response (20Hz–20kHz/100kHz)	+0.0dB to –0.3dB/–4.0dB
Input sensitivity (for 0dBW/70W)	165mV / 1395mV (balanced)
A-wtd S/N ratio (re. 0dBW/70W)	98.0dB / 116.5dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.095–0.88%
Power consumption (Idle/Rated o/p)	211W / 400W
Dimensions (WHD) / **Weight**	470x260x470mm / 28kg